-repeating National Fuel Saver & Company's mistake.

$$eff = P_{out} / P_{in}$$

3L @ 40% = 200hp

$$\therefore \uparrow P_{out} = \uparrow eff \times P_{in}$$

This formula is cheaper to run. or

$$\uparrow P_{out} = eff \times P_{in} \uparrow$$

4L @ 30% = 200hp

This device achieves it's objective BY obliterating the emmission. But that is not the objective.

Dear Mr. Kim

The purpose of 10/664,983 is to eliminate mistakes made in the mis-understanding of how this device worked I made in 1999. →

Any application involving catalytic converter technology in internal combustion engines ~~Be~~ I have made before 10/664,983 are wrong.

10/664,983 is the first application that correctly identifies the principle of operation.

The objective of this → device is to increase the working efficiency of an ICE, not to obliterate the emmissions.

Pine Branson

Bradstreet, Hagino

1. enthalpy +5% => eff. +5%
2. no change in thermaldynmic efficiency

question: pierrebaugon@hotmail.com

First vs Current
↑ CCCC & JFCC

(TBI)
+50% ~~+50%~~

First app: 1. enthalpy ↑ => eff. ↑ +50%
(65% At→ 99% of A/F mixture) 2. no change in thermaldynamic eff.

Current: 1. entropy ↓ => eff. ↑ +
2. enthalpy +5% => eff. +5%

effect w/ SFI: working efficiency
~~30~~ 25% At→ 30%

Summery notes: ICECC

1. Reason to Choose Pt. catalyst
   a, excellent Catalyst
   b, acid proof, used to make acid proof lab equipment

2. What it does: Eliminates most end gases. ↑ Why? radical unburned fuel catalyses new A/F mixture and causes knocking. Result: less Knock more spark advance ↑ mep ↑ entropy ↓ eff. ↑

3. Method of eliminating end gases: catalytic conversion

← First application vs Current rev

First app: assumed 65% of A/F mixture combusted before conversion 99% after

Current: no end gases after conversion mep ↑

Mr. Kim, Please read the back IFW



| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/664,983 | BOURGON, DONALD PIERRE | |
| | Examiner | Art Unit | |
| | Ted Kim | 3746 | |

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *09 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 February 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Please bourgon@hotmail.com 613-932-2821 questions:

## DETAILED ACTION

### *Drawings*

1. The informal drawings of 02/09/2004 are not of sufficient quality to permit ready reproduction. Furthermore, the figure labels obstruct portions of the figures and should be not be placed in the middle of a figure but to the top, side, or bottom. Accordingly, replacement drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to this Office action. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action.

### *Specification*

2. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

#### Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
(d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or

REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)

(e) BACKGROUND OF THE INVENTION.

(1) Field of the Invention.

(2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.

(f) BRIEF SUMMARY OF THE INVENTION.

(g) **BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S). – Note this section is required and completely missing any description of Figures 1-4**

(h) DETAILED DESCRIPTION OF THE INVENTION.

(i) CLAIM OR CLAIMS (commencing on a separate sheet).

(j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).

(k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

### *Claim Rejections - 35 USC § 112*

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

purpose of CCCC; increase eff. method; catalytic conversion

5. Claims 1-8 are rejected as failing to define the invention in the manner required by 35 U.S.C. 112, second paragraph.

The claim(s) are narrative in form and replete with indefinite and functional or operational language. The structure which goes to make up the device must be clearly

↓

There is no structure only platinum plating/anodization

and positively specified. The structure must be organized and correlated in such a manner as to present a complete operative device. The claim(s) must be in one sentence form only. **Note the format of the claims in the patent(s) cited.**

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by CA 2,282,182 or CA 2299746. Applicant's previously filed Canadian patent applications published 2/25/2001 and 08/22/2002 respectively disclose the catalytic coating of the surfaces of the IC engine and Gas turbine engine with platinum catalyst. All the results of the "claims" are inherently performed or taught by these patent publications.

8. In all of the following references, the presence of the catalyst will perform the functions "claimed" by applicant including: reducing the activation energy, increasing the rate of combustion, reducing "missing" or "flameout", increasing engine mean effective pressure, increasing power output, increasing thermal efficiency, cleaner exhaust gases, allowing for greater ignition advance or higher compression ratio, etc. These are inherent capabilities of using the catalyst with the IC engine or Gas turbine engine.

The CCCC and JECC assume only ~~65%~~ about 65% of the air/fuel mixture burn, as published by the National Fuel Saver Company, manufacture of the GASAVER.

9. Claims 1-8 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by ~~Totman (4,530,340), Bradstreet et al (2,978,360), Brass et al (4,612,880), Hagino (4,577,611).~~ Each of these references teaches a catalytic liner on all the internal combustion engine components.

Totman (4,530,340) teaches catalytic liner 12, 18.

Brass et al teach a catalytic coating on the combustion chamber surfaces (see col. 5, lines 56-col. 6, lines 12).

Bradstreet teaches a catalytic coating 12, 13, 14, 15 (see col. 5, lines 9-15).

Hagino teaches a catalytic coating 7 on the combustion chamber surfaces.

10. Claims 1-8 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by any of Weil et al (5,355,668), Hums et al (5,946,917), Correa (5,460,002), and Pfefferle et al (4,603,547).

Weil et al teach a catalytic coating on any and all gas turbine components including combustor and turbine in the flow path (col. 3, lines 28-58). This will inherently reduce relighting in case of flameout.

Hums et al teach a catalytic coating 12 on the gas turbine combustor. This will inherently reduce relighting in case of flameout.

Correa teaches a catalytic coating 26 on the gas turbine combustor. This will inherently reduce relighting in case of flameout.

Pfefferle et al teach a catalytic coating 22 on the gas turbine combustor. This will inherently reduce relighting in case of flameout.

→ The theory of Chemical Kinetics

→ So does my Chemistry book

*Claim Rejections - 35 USC § 103*

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over any of Hums et al (5,946,917), Correa (5,460,002), Totman (4,530,340), Bradstreet et al (2,978,360), Brass et al (4,612,880), and in view of any of Hagino (4,577,611), Weil (5,355,668), CA 2,282,182 and CA 2299746. The claims are unclear as to what extent they claim the use of a platinum catalyst (appears only in claim 1 and not the rest). Hums et al (5,946,917), Correa (5,460,002), Totman (4,530,340), Bradstreet et al (2,978,360), Brass et al (4,612,880) all teach a catalytic coating on the combustor surfaces. To the extent which platinum is not disclosed, Hagino (4,577,611), Weil (5,355,668), CA 2,282,182 and CA 2299746 all explicitly disclose the use of platinum catalysts for either the IC engine or gas turbine engine. It would have been obvious to one of ordinary skill in the art to employ platinum as the catalyst, as a well known catalyst used in catalytic combustion and known for its strength and/or longevity, and/or suitability for this application. reason it was chosen ?

13. An examination of this application reveals that applicant is unfamiliar with patent prosecution procedure. While an inventor may prosecute the application, lack of skill in

a 75% reduction in end gases will not produce enough or a noticeable increase in ~~fuel e~~ efficiency. There would still be enough radicals to effect same catalytic detonation of the A/F mixture.

But Bradstreet did not know. Therefore the sulfuric and ~~su~~ sulfonic Acids formed by sulfer in all diesel and gasoline would destroy ~~the~~ Bradstreet's device in short order. Careless?

Gasoline FAQ 1-4

Section 10

↓

~~fast~~ almost at the end.

this field usually acts as a liability in affording the maximum protection for the invention disclosed. Applicant is advised to secure the services of a registered patent attorney or agent to prosecute the application, since the value of a patent is largely dependent upon skilled preparation and prosecution. The Office cannot aid in selecting an attorney or agent.

Applicant is advised of the availability of the publication "Attorneys and Agents Registered to Practice Before the U.S. Patent and Trademark Office." This publication is for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

### *Contact Information*

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Ted Kim whose telephone number is 571-272-4829. The Examiner can be reached on regular business hours before 5:00 pm, Monday to Thursday and every other Friday.

The fax numbers for the organization where this application is assigned are 703-872-9306 for Regular faxes and 703-872-9306 for After Final faxes.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler, can be reached on 571-272-4834.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist of Technology Center 3700, whose

# Advantages

ICECC → highest power out per ci/L
→ most emmission destroyed in engine.
→ No mechanical parts
→ reliability
→ inexpensive, exhaust mounted converter are required, but this device can serve as a very durable first stage converter. Piston and head, Combustion chamber and turbines are already present → large simple durable parts
→ does not interfere with airflow through engines

- no extra valves, pre-combustion chamber
- no supercharger

telephone number is 703-308-0861. General inquiries can also be directed to the Patents Assistance Center whose telephone number is 800-786-9199. Furthermore, a variety of online resources are available at http://www.uspto.gov/main/patents.htm


| | | |
|---|---|---|
| Ted Kim | Telephone | 571-272-4829 |
| Primary Examiner | Fax (Regular) | 703-872-9306 |
| April 4, 2005 | Fax (After Final) | 703-872-9306 |
| Technology Center 3700 Receptionist | Telephone | 703-308-0861 |
| Patents Assistance Center | Telephone | 800-786-9199 |

advantages ←

# Comparisson of ~~Similar~~ Technologies with same Objective

**ICECC** - increase mep by obliterating end gases with calalytic Conversion. (no end gases.) ~~most~~ 2nd most effective technique

**Miller Cycle Engine** - increase mep by using a Super-chaverger an opening intake and exhaust valves at the same time so the end gases are ~~blow~~ completely blown out. most effective technique. → no end gases

**Honda CVCC stratisfied Engine** - increase mep through rapid combustion, rich mixture in pre-combustion chamber pre-heats, vapowizes ~~an~~ fuel and spits a jet of hot fuel gas into lean A/F mixture - extreamly good atomization - no end gases. ←

# Notice of References Cited

| Application/Control No. | Applicant(s)/Patent Under Reexamination | |
|---|---|---|
| 10/664,983 | BOURGON, DONALD PIERRE | |
| Examiner | Art Unit | Page 1 of 1 |
| Ted Kim | 3746 | |

**U.S. PATENT DOCUMENTS**

| * | | Document Number Country Code-Number-Kind Code | Date MM-YYYY | Name | Classification |
|---|---|---|---|---|---|
| | A | US-4,530,340 | 07-1985 | Totman, Millard C. | 123/669 |
| | B | US-2,978,360 | 04-1961 | BRADSTREET ; et. al. | 123/669 |
| | C | US-4,612,880 | 09-1986 | Brass et al. | 123/669 |
| | D | US-4,577,611 | 03-1986 | Hagino | 123/669 |
| | E | US-5,355,668 | 10-1994 | Weil et al. | 60/723 |
| | F | US-5,946,917 | 09-1999 | Huma et al. | 60/723 |
| | G | US-5,460,002 | 10-1995 | Correa | 60/723 |
| | H | US-4,603,547 | 08-1986 | Pfefferle et al. | 60/723 |
| | I | US- | | | |
| | J | US- | | | |
| | K | US- | | | |
| | L | US- | | | |
| | M | US- | | | |

I would have Kept the principle of operation a "trade secret" if the above patents did not exist. Their existance forces me to reveal the principle of opevation

**FOREIGN PATENT DOCUMENTS**

| * | | Document Number Country Code-Number-Kind Code | Date MM-YYYY | Country | Name | Classification |
|---|---|---|---|---|---|---|
| | N | CA2299746A1 | 08-2001 | CA | Bourgon Donald Pierre | na |
| | O | CA2282182A1 | 02-2001 | CA | Bourgon Donald Pierre | na |
| | P | | | | | |
| | Q | | | | | |
| | R | | | | | |
| | S | | | | | |
| | T | | | | | |

→ Assumes 65% of A/F mixture burns during normal operation. Like the National Fuel Saver Company says. The objective of these is to increase efficiency not quash emmissions

**NON-PATENT DOCUMENTS**

| * | | Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages) |
|---|---|---|
| | U | See Over → |
| | V | |
| | W | |
| | X | |

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Designs with similar operation:
(reducing heat rejection)

1. Soichiro Honda's CVCC stratisfied Charge Engine - works by atomization instead of Catalytic Conversion
2. Mazda Miller-cycle engine - a Supercharger and carefully selected valve timing evacuates all the end gasses From the cylinders no end gases ~~to~~ less Knocking
3. Electronic Ignition, 4 SFI

The end gases must be obliterated or any of the US inventors designs would have ~~the~~ show a marked increase in efficiency. a 75% reduction in end gasses would have almost no effect on efficiency.

An increase of 20 SFI - 30 or 50% TDI may seem impossible but Soichiro Honda invented something that tripled the efficiency of piston engines in 1938.

- Honda invented Piston Rings which prevent blow-by, sealing the piston. mep ↑↑↑

I remember reading about a 191X cadillac with a 70hp V12 @ 3mpg

like high swirl heads on a diesel, TDI
others: Recycling rejected heat:: EGR System
Atomization
preheating A/F mixture

Office de la Propriété Intellectuelle du Canada
Un organisme d'Industrie Canada

Canadian Intellectual Property Office
An agency of Industry Canada

CA 2299746 A1 2001/08/22

(21) 2 299 746

(12) DEMANDE DE BREVET CANADIEN
CANADIAN PATENT APPLICATION

(13) A1

(22) Date de dépôt/Filing Date: 2000/02/22

(41) Mise à la disp. pub./Open to Public Insp.: 2001/08/22

(51) Cl.Int.$^{7}$/Int.Cl.$^{7}$ F23R 3/40, F02C 3/00

(71) Demandeur/Applicant:
BOURGON, PIERRE, CA

(72) Inventeur/Inventor:
BOURGON, PIERRE, CA

10/664,983 does not make refrence to this application because

(54) Titre : CONVERTISSEUR CATALYTIQUE DE TURBOREACTEUR

(54) Title: JET ENGINE CATALYTIC CONVERTER

This patent has been abandoned because the principle of operation is wrong.

(57) Abrégé/Abstract:
The JET ENGINE CATALYTIC CONVERTER is a catalytic converter built into the engine. This invention uses platinum(Pt), the primary catalyst used in automobile catalytic converters. Pt is anodized onto all the metal parts of the combustion chamber and in the turbine, except for any bearings that may be used in these stages. This catalyzes some of the air/fuel mixture in the engine where it can do useful work to propel the aircraft. It only needs to use Pt. However if other more economical catalysts are available, they could also be used provided they are effective.

radical and gases tend to cause unwanted ignition. this would allow the compressor ratio to be increased. It is also useful if the fuel burns in the engine. Blue flames coming out exaust: bad, cool looking but ~~inefficient~~ inefficient. → and loud.

The real practicle application For this device is in a high performance aircraft. Airforce
Other wise: less jet and more fan in a fanjet, faster Tanks!

# Abstract

The JET ENGINE CATALYTIC CONVERTER is a catalytic converter built into the engine. This invention uses platinum(Pt), the primary catalyst used in automobile catalytic converters. Pt is anodized onto all the metal parts of the combustion chamber and in the turbine, except for any bearings that may be used in these stages. This catalyzes some of the air/fuel mixture in the engine where it can do useful work to propel the aircraft. It only needs to use Pt. However if other more economical catalysts are available, they could also be used provided they are effective.

# Specifications

The INTERNAL COMBUSTION ENGINE is a transducer that converts thermal energy into mechanical energy. In an internal combustion engine, the NET EFFICIENCY of the engine is determined by the THERMAL EFFICIENCY, and the MECHANICAL EFFICIENCY. NET EFFICIENCY is determined by how much fuel is needed to produce 1hp. THERMAL EFFICIENCY is determined by how much of the fuels' chemical potential energy is converted into heat. MECHANICAL EFFICIENCY is determined by how much of the heat used by the engine is converted into mechanical energy after friction losses.

Heat in = ( mass in grams x potential energy/g ) x ( percentage of fuel burned/100)

Power out = heat in x efficiency ~~heat in~~ = heat in - heat rej.

This invention makes use of unused energy that normally would be wasted. This device to causes the engine burns a higher percentage of the air/fuel charge in the engine. As this patent is not for any specific engine but jet engines in general, the thickness of plating will depends much on the engine in question. The plating needs to be as thin as possible. This is so it will not only get hot as fast as possible. This will also improve durability as it will be less susceptible expansion damage.

Notes:

This invention is intended to be as transparent as possible. There should be no need to alter the shape of any parts in the engine. The standard air/fuel mixture can be used.

diagrams

# Claims

1. The engine will be more responsive.
2. The engine will be smoother.
3. The engine will gain more thrust across the power band.
4. The engine will last longer because there will be fewer bi products such as carbon and unburned fuel to contaminate the engine.
5. There will be about an increase in fuel economy depending on the engine and increased range.

OPIC
OFFICE DE LA PROPRIÉTÉ INTELLECTUELLE DU CANADA

CIPO
CANADIAN INTELLECTUAL PROPERTY OFFICE

(12) (19) (CA) **Demande-Application**

(21) (A1) **2,282,182**
(22) 1999/08/25
(43) 2001/02/25

does not apply to 10/664,983 because

(72) BOURGON, PIERRE, CA
(71) BOURGON, PIERRE, CA

(51) Int.Cl.[6] F02B 51/02, F02F 3/14

(54) **CONVERTISSEUR CATALYTIQUE POUR CHAMBRE DE COMBUSTION**

(54) **COMBUSTION CHAMBER CATALYTIC CONVERTER**

This patent has been withdrawn because the principle of operation is not correct

(57) The COMBUSTION CHAMBER CATALYTIC CONVERTER is a catalytic converter built into the engine. This invention uses platinum(Pt), the primary catalyst used in conventional catalytic converters is anodized on top of the piston, inside of the combustion chamber carved into the bottom of the heads and the bottom of the valve if necessary. This catalyzes some of the air/fuel mixture that would normally be burned off in the convention catalytic converter where in the engine where it can do useful work to run the vehicle. It is designed to do exactly as the GASAVER, produced by the national fuel saver company. However this invention is intended to be built into engines of production vehicles that run on gasoline as a primary catalytic conversion stage. It only uses one catalyst Pt.

radical engd gasses (emmission) cause unwanted combustion and eighther the CR↓ or ignition timing retarded to ~~stop~~ prevent Knocking. Obliterate the end gases and increase the, MEP by increasing CR or advancing iguition timing. That is why the gain is 20-50% in gasoline engine and 5-10% in Deisels ↑ turbo ↓

That is why a gasoline Jetta burns 7L/100Km and the diesel burns 4.6L/100Km even though the energy content of diesel is only 1.32 times higher than gasoline (1.32L of gasoline ≈ ΔH of 1L diesel)

7/4.6 ≈ 1.5

(gasoline and diesel have about the same energy content by wt. but diesel is about 900g/L and gasoline is about 680g/L.)

# Abstract

The COMBUSTION CHAMBER CATALYTIC CONVERTER is a catalytic converter built into the engine. This invention uses platinum(Pt), the primary catalyst used in conventional catalytic converters is anodized on top of the piston, inside of the combustion chamber carved into the bottom of the heads and the bottom of the valve if necessary. This catalyzes some of the air/fuel mixture that would normally be burned off in the convention catalytic converter where in the engine where it can do useful work to run the vehicle. It is designed to do exactly as the GASAVER, produced by the national fuel saver company. However this invention is intended to be built into engines of production vehicles that run on gasoline as a primary catalytic conversion stage. It only uses one catalyst Pt.

# Specifications

The INTERNAL COMBUSTION ENGINE is a transducer that converts thermal energy into mechanical energy. In an internal combustion engine, the NET EFFICIENCY of the engine is determined by the THERMAL EFFICIENCY, and the MECHANICAL EFFICIENCY. The NET EFFICIENCY is determined by how much fuel is needed to produce 1hp. The THERMAL EFFICIENCY is determined by how much of the fuels' chemical potential energy is converted into heat minus the sum of heat rejected in the exhaust and heat lost and carried away by the cooling system. The MECHANICAL EFFICIENCY is determined by how much of the heat used by the engine is converted into mechanical energy after friction losses.

Heat in = ( mass in grams x potential energy/g ) x ( percentage of fuel burned/100)
- ( heat rejected + heat lost ).

Power out = heat in x efficiency = heat in - friction losses

This invention makes use of energy that normally would be wasted as it is burned of in the catalytic converter located in the exhaust, allowing this device to make the engine burn a higher percentage of the fuel in the engine. As this patent is not for any specific engine but gasoline engines in general, the thickness of plating will depends much on the engine in question. For example, an engine with a redline of 4000rpm will not need plating as strongly as an engine with a redline of 8000rpm.

Notes:

This invention is intended to be as transparent as possible. There should be no need to alter the shape of any parts in the engine. The standard air fuel mixture of 14.7:1 can be used. As far as the computer knows, the car is going down a hill.

Diagrams

99+ with new cars with O2→Sensor before and after cat the ECM will register error code (no change in converter)

# Claims

1. The engine will be smoother.
2. Improved driveability.
3. The engine will be more responsive.
4. The engine will gain more torque across the power band, more at the lower end and less at the top end.
5. The engine will last longer because there will be fewer bi-products such as carbon and unburned gasoline to contaminate pistons, heads, cylinders and lubrication system and destroy rubber gaskets, o-ring and oil. Air and fuel filters will last longer because of the reduction of air and fuel that will have to be passed through them.
6. There will be about a 20% to 30% increase in fuel economy depending on the engine and increased range.
7. It will be impossible to remove this catalytic converter without spending a significant amount of time or money.
8. The engine will be able to tolerate higher compression ratios without requiring higher octane fuel. This will not be the case when the engine is still cold, however, the computer will likely retard the ignition timing advance to about 14-17 degrees which will prevent knocking during cold starts.
9. Under hood temperatures will be reduced by eliminating much of the heat produced by catalytic conversion.

you do not agree with this?

Take the engine apart and change the pistons and head instead of replacing an exhaust mounted cat with a muffler

soon I could enter a room of any size and be able to reach people from virtually all walks of life.

No matter how prepared you are, there's one thing that I can absolutely guarantee: if you're on the river of life, it's likely you're going to hit a few rocks. That's not being negative; that's being accurate. The key is that when you do run aground, instead of beating yourself up for being such a "failure," remember that **there are no failures in life.** There are only results. If you didn't get the results you wanted, learn from this experience so that you have references about how to make better decisions in the future.

*"We will either find a way, or make one"*
—HANNIBAL

One of the most important decisions you can make to ensure your long-term happiness is to decide to **use whatever life gives you in the moment.** The truth of the matter is that there's nothing you can't accomplish if: 1) You clearly decide what it is that you're absolutely committed to achieving, 2) You are willing to take massive action, 3) You notice what's working or not, and 4) You continue to change your approach until you achieve what you want, using whatever life gives you along the way.

Anyone who's succeeded on a large scale has taken these four steps and followed the Ultimate Success Formula. One of my favorite "Ultimate Success Stories" is Mr. Soichiro Honda, founder of the corporation that bears his name. Like all companies, no matter how large, Honda Corporation began with a decision and a passionate desire to produce a result.

In 1938, while he was still in school, Mr. Honda took everything he owned and invested it in a little workshop where he began to develop his concept of a piston ring. He wanted to sell his work to Toyota Corporation, so he labored day and night, up-to-his-elbows in grease, sleeping in the machine shop, always believing he could produce the result. He even pawned his wife's jewelry to stay in business. But when he finally completed the piston rings and presented them to Toyota, he was told they didn't meet Toyota's standards. He was sent back to school for two years, where he heard the derisive laughter of his instructors and fellow students as they talked about how absurd his designs were.

But rather than focusing on the pain of the experience, he decided to continue to focus on his goal. Finally, after two more years, Toyota gave Mr. Honda the contract he'd dreamed of. His passion and belief paid off because he had known what he wanted, taken action, noticed what was working, and kept changing his approach until he got what he wanted. Then a new problem arose.



The Japanese government was gearing up for war, and they refused to give him the concrete that was necessary to build his factory. Did he quit there? No. Did he focus on how unfair this was? Did it mean to him that his dream had died? Absolutely not. Again, he decided to utilize the experience, and developed another strategy. He and his team invented a process for creating their own concrete and then built their factory. During the war, it was bombed twice, destroying major portions of the manufacturing facility. Honda's response? He immediately rallied his team, and they picked up the extra gasoline cans that the U.S. fighters had discarded. He called them "gifts from President Truman" because they provided him with the raw materials he needed for his manufacturing process—materials that were unavailable at the time in Japan. Finally, after surviving all of this, an earthquake leveled his factory. Honda decided to sell his piston operation to Toyota.

Here is a man who clearly made strong decisions to succeed. He had a passion for and belief in what he was doing. He had a great strategy. He took massive action. He kept changing his approach, but *still* he'd not produced the results that he was committed to. Yet he decided to persevere.

After the war, a tremendous gasoline shortage hit Japan, and Mr. Honda couldn't even drive his car to get food for his family. Finally, in desperation, he attached a small motor to his bicycle. The next thing he knew, his neighbors were asking if he could make one of his "motorized bikes" for them. One after another, they jumped on the bandwagon until he *ran out* of motors. He decided to build a plant that would manufacture motors for his new invention, but unfortunately he didn't have the capital.

As before, he made the decision to find a way no matter what! His solution was to appeal to the 18,000 bicycle shop owners in Japan by writing them each a personal letter. He told them how they could play a role in revitalizing Japan through the mobility that his invention could provide, and convinced 5,000 of them to advance the capital he needed. Still, his motorbike sold to only the most hard-core bicycle fans because it was too big and bulky. So he made one final adjustment, and created a much lighter, scaled-down version of his motorbike. He christened it "The Super Cub," and it became an "overnight" success, earning him the Emperor's award. Later, he began to export his motorbikes to the baby boomers of Europe and the United States, following up in the seventies with the cars that have become so popular.

Today, the Honda Corporation employs over 100,000 people in both the United States and Japan and is considered one of the biggest car-

Probably weighed as much as ~~the~~ Swift

garbureted

1912 Caddillac V12 without Rings:
70hp!

1996 Suzuki 1.3L I4 with ring and SFI + OHVs, 70hp

Could be a 1L I4 with the ICECC

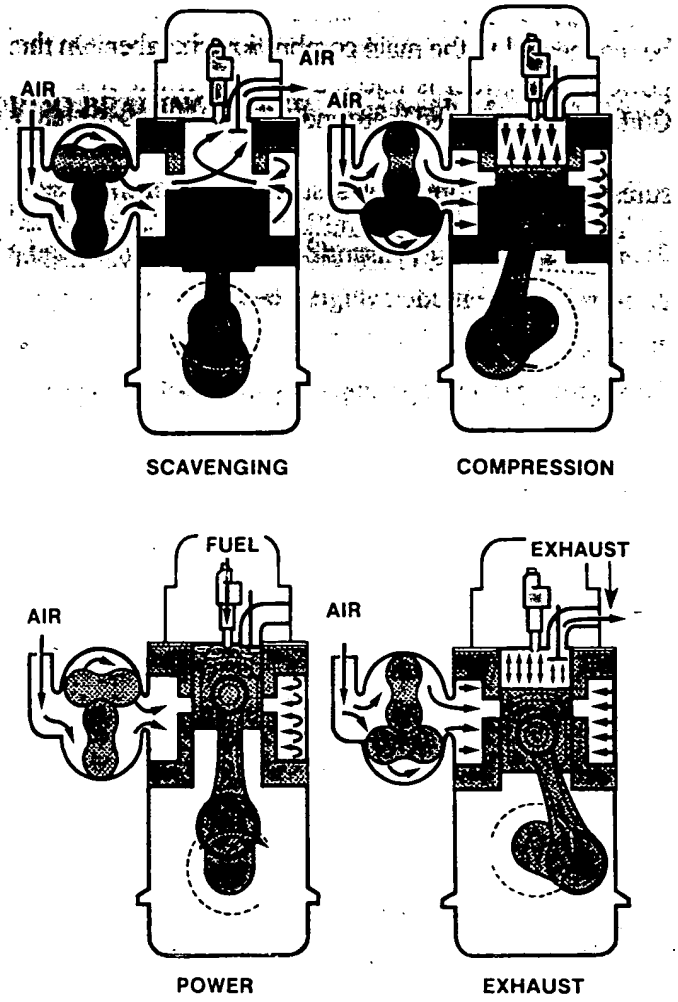


**Figure 6-27** Two-stroke diesel engine cycle.

however, is quite different. For one thing, the rotary engine uses a rotating motion rather than a reciprocating motion. In addition, it uses ports rather than valves for controlling the intake of the air/fuel mixture and the exhaust of the combusted charge.

The heart of a rotary engine is a roughly triangular rotor that "walks" around a smaller, rigidly mounted gear. The rotor is connected to the crankshaft through additional gears in such a manner that, for every rotation of the rotor, the crankshaft revolves three times. The tips of the triangular rotor move within the housing and are in constant contact with the housing walls. As the rotor moves, the volume between each side of the rotor and the housing walls continually changes.

Referring to **Figure 6–28**, when the side of the rotor is in position A, the intake port is uncovered and the air/fuel mixture is entering the upper chamber. As the rotor moves to position B, the intake port closes and the upper chamber reaches its maximum volume. When full compression has reached position C, the 2 spark plugs fire, one after the other, to start the power stroke. At position D, rotor side A uncovers the exhaust port and exhaust begins. This cycle continues until position A is reached where the chamber volume is at minimum and the intake cycle starts once again.

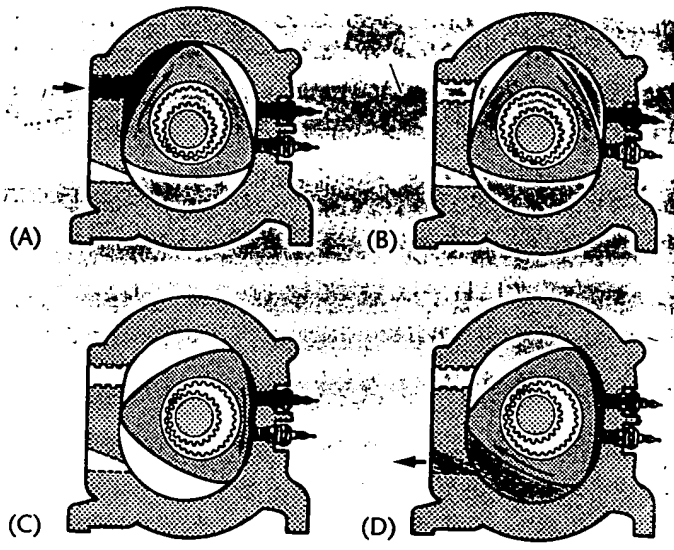


**Figure 6-28** Rotary engine cycle.

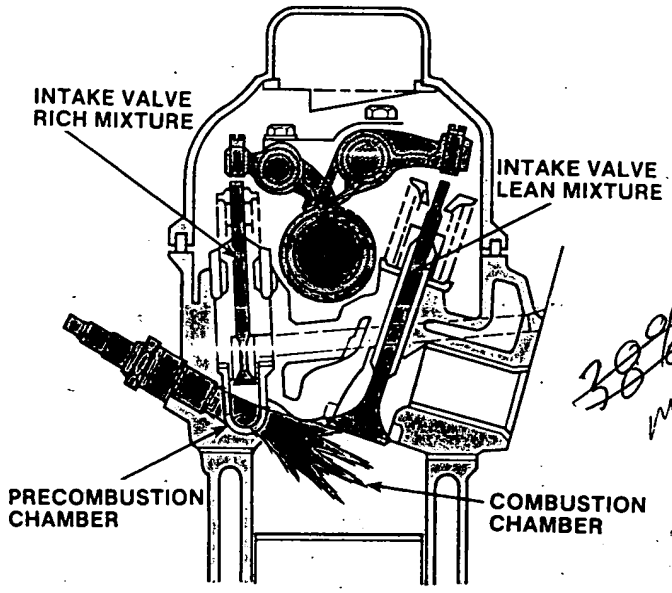


**Figure 6-29** Typical stratified charge engine.

The fact that the rotating combustion chamber engine is small and light for the amount of power it produces makes it attractive for use in automobiles. Using this small, lightweight engine can provide the same performance as a larger engine. However, the rotary engine, at present, cannot compete with the piston gasoline engine in terms of durability, exhaust emission control, and economy.

## Stratified Charge Engine

The stratified charge engine **(Figure 6–29)** combines the features of both the gasoline and diesel engines. It differs from the conventional gasoline engine in that the air/fuel mixture is deliberately stratified to produce a small, rich mixture at the spark plug while providing a leaner,

more efficient and cleaner-burning main mixture. In addition, the air/fuel mixture is swirled for more complete combustion.

Referring to position A in **Figure 6–30**, a large amount of very lean mixture is drawn through the main intake valve on the intake stroke to the main combustion chamber. At the same time, a small amount of rich mixture is drawn through the auxiliary intake valve into the precombustion chamber. At the end of the compression stroke in position B, the spark plug fires the rich mixture in the precombustion chamber. As the rich mixture ignites, it in turn ignites the lean mixture in the main chamber. The lean mixture minimizes the formation of carbon monoxide during the power stroke (position C). In addition, the peak temperature stays low enough to minimize the formation of oxides of nitrogen, and the mean temperature is maintained high enough and long enough to reduce hydrocarbon emissions. During the exhaust stroke (position D) the hot gases exit through the exhaust valve.

A great deal of automobile engineering research, especially by Japanese and European manufacturers, is being done on these engines. In fact, the Honda CVCC engine uses a stratified charge design. This engine uses a third valve to release the initial charge. The stratified charge combustion chamber has three important advantages. It produces good part-load fuel economy, can run efficiently on low-octane fuel, and has low exhaust emissions.

## Miller-Cycle Engines

A version of the Miller-cycle engine is the base powerplant in late-model Mazda Millennias. This engine design is a modification of the four-stroke engine. During the intake stroke, a supercharger feeds highly compressed air to an intercooler. This cooled, but compressed, air is fed directly into the cylinders. During the intake stroke, the intake valve remains open for a longer than normal time. This prevents compression from occurring until the piston has moved one-fifth of the way toward TDC. Then the valve closes and compression occurs. Because of the lengthened intake stroke and the constant supply of air from the supercharger, the cylinder is filled with air and fuel. This is something that doesn't happen often in a four-stroke engine. The shortened compression stroke keeps compression ratios and cylinder temperatures low. The power stroke begins as soon as the piston is ready to move its bore and continues until it reaches BDC. This longer power stroke provides more torque and increased efficiency. The exhaust stroke is much the same as that in a four-stroke engine.

Those who conduct road tests of Mazdas with a Miller-cycle engine always remark on the smooth operation and delivery of power from the engine. Most reviewers are surprised that an engine so small can perform so well. Perhaps this technology will be used in more car models in the future.

## Electric Motors

In recent years, there has been much talk about electric cars. In fact a few have been introduced to the public; the most notable of them is General Motors' EV1 **(Figure 6–31)**. This car was released with huge electric motors and a large bank of lead-acid batteries. It has excellent acceleration and very quiet operation. The biggest problem is the distance it will travel before the batteries need to be recharged. General Motors is switching to **nickel metal hydride (NiMH)** batteries, which should give the car a 160-mile range between charges. One of the alluring aspects of electric cars is the lack of an exhaust; therefore, they emit no pollutants. They also use no fossil fuels.

Use of electric cars may be more widespread in the future, but this will depend upon the development of batteries that can extend the range of operation. Other auto manufacturers have developed electric-powered vehicles, most of them designed as commuter vehicles.

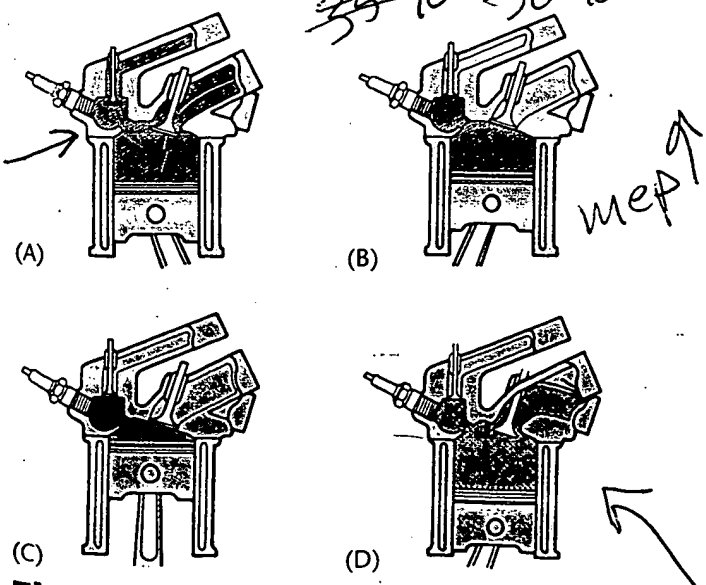


**Figure 6-30** Four-stroke cycle of a stratified charge engine.

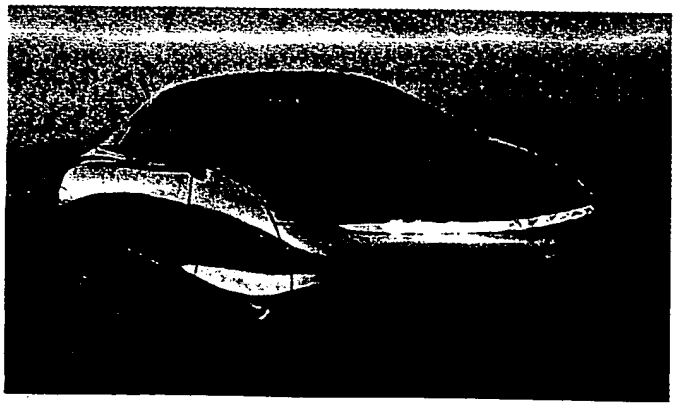

**Figure 6-31** General Motors' EV1 electric-powered car. *Courtesy of Artville LLC*

working model

One particular Test Vehicle a 1986 Olds Cieura With a TBI 2.5L I4 (4-tech) engine ran Smoother than the engine in any car with a 4. Before the GASAVER was added the engine sounded and ran like a diesel Golf.
The 4 Tech also stopped overheating.